REMARKS

Claims 6-26 are pending.

Claims 6-26 stand rejected.

Claims 11, 20 and 26 have been cancelled herein without prejudice.

New dependent claims 27 and 28 have been added, being fully supported.

Applicant acknowledges the Examiner's rejection of claims 6-10, 12-14 and 21-25, under 35 U.S.C. § 101, in view of alleged non-statutory subject matter. Applicant traverses this rejection, but has nonetheless made responsive clarifying amendments to these claims to obviate this rejection.

Applicant acknowledges the Examiner's rejection of claims 6-9, 10, 11-14, 15, 19 and 24, under 35 U.S.C. § 103(a), as being variously obvious over *Altschuler* (4,872,122; 03 October 1989) in view of *Lawrence* (6,272,481; filed 14 September 1998), and in some instances in further view of of *Ridgeway et al Ridgeway* (6,012,052). Applicant respectfully traverses these rejections, but has nonetheless made responsive amendments to obviate this rejection.

Applicant acknowledges the Examiner's rejection of claims 6-14, 24, and 26, under 35 U.S.C. § 102(b), as being anticipated by *Altschuler* (4,872,122; 03 October 1989). Applicant respectfully traverses these rejections, but has nonetheless made responsive amendments to obviate this rejection.

No new matter has been added.

Rejection under 35 U.S.C. § 101

The Examiner rejected claims 6-10, 12-14 and 21-25, under 35 U.S.C. § 101, in view of alleged non-statutory subject matter. Applicant traverses this rejection for the reasons of record, but has nonetheless made responsive clarifying amendments to these claims to obviate this rejection.

Specifically, the claims have been amended to recite provision of the tangible result of a medical diagnosis to a user. For example, independent claim 6 recites "ranking, using a software program stored on the storage device that is operative with a processor of the computer to receive and process the response, and the alternative medical diagnoses according to relative likelihood, based at least in part on the product of the at least one response values and the respective medical diagnosis-specific primary bias values to provide a medical diagnosis comprising a ranked set of alternative medical diagnoses; and (d) providing the medical diagnosis, or a portion thereof, to the user."

Applicant, therefore, respectfully requests withdrawal of this 35 U.S.C. § 101-based rejection, based on the Applicant's clarifying amendments.

Rejections under 35 U.S.C. § 103

Altschuler in view of Lawrence:

The Examiner has rejected claims 6-9, 10, 11-14, 15 and 24, under 35 U.S.C. § 103(a), as being obvious over ***Altschuler et al*** (U.S. Patent No. 4,872,122, 03 Oct., 1989) in view of ***Lawrence*** (U.S. Patent No. 6,272,481, filed 14 Sept. 1998), and further rejects claim 19 as being obvious over *Altschuler* in view of *Lawrence* and in further view of Ridgeway.

Specifically, the Examiner urges that Altschuler teaches a method for ranking a set of alternatives according to likelihood, comprising: (a) configuring...a set of alternatives, a query set...(citing column 3, ll. 11-21 of Altschuler), a set of primary bias value wherein each primary bias value <u>directly</u> associates a particular <u>query</u> with a particular alternative of the set of alternatives, and reflects at least one human expert's prior conception of the degree of predictive value of the query for the particular alternative diagnosis relative to others (citing the Abstract of Altschuler;

however Altschuler does not teach primary bias values in the instant sense because it does not teach directly associates a particular query with a particular alternative of the set of alternatives)…; (b) inputting a user's response to the query (citing Figure1A, item 12 of Altschuler); and (c) ranking, using a software program (citing column 2, ll. 47-57 of Altschuler)…, the alternatives according to relative likelihood, based at least in part of the set of primary bias values (citing Fig. 6; column 10, ll. 24-44 of Altschuler). The Examiner further states that while Altschuler does not teach using a software program stored on the storage device that is operative with a processor of the computer, Lawrence et al. teaches using a software program stored on the storage device that is operative with a computer (citing Abstract; and Fig. 3 of Lawrence), and that it would have been obvious to one of ordinary skill in the relevant art to combine Altschuler with Lawrence to arrive at the presently claimed subject matter.

Applicant respectfully traverses this rejection, because a *prima facie* case of obviousness is not reasonably supported by these asserted references, alone or in combination. The system and method of Altschuler is *fundamentally different* than the present system and method, because neither Altschuler nor Lawrence teach or suggest the presently recited Human expert-assigned primary bias values, wherein each primary bias value directly associates a particular query with a particular alternative condition of the set of alternative conditions, and reflects at least one human expert's prior conception of the degree of predictive value of the query (not the answer or 'parameters' of Altschuler) for the particular alternative condition relative to other alternative conditions. Additionally, Altschuler teaches and requires (see specification and claims): (a) a *statistical inference engine* using; (b) a classic *decision tree structure* comprising a set of linked nodes; (c) a computer generated *statistical data base* generated using chi square and Baynesian probability methods based on; (d) *multiple system-generated case simulations* to establish; (e) a probability tree for predicting an expert's path through the decision tree. The present system and method is fundamentally different, and not only does not require these elements (a-e), but requires elements not taught or suggested by the prior art, including Altschuler and Lawrence:

-use of primary bias values (non-statistically based weighting factors); and

-ranking the alternative medical diagnoses according to relative likelihood, based at least in part on the product of the at least one response values and the respective medical diagnosis-specific primary bias values).

Altschuler. Specifically, Altschuler teaches having an expert (assisted by computer software) establish a "decision making structure." Specifically, the decision making structure is based on initially constructing a classic 'decision tree' comprising a tree of "relational questions." The expert establishes a "root question" (root node), enters the possible responses to the root question, then enters the subsequent linked questions for each possible response. When, in the decision tree, the response to a question is a terminus or output action, the expert enters the choice from among the alternate output actions. Each response in the tree may only be linked to one parent question. (col. 3, ll. 22-40). Therefore, because the outputs of Altschular are responses to terminal nodes, it is impossible in Altschuler that the outputs are directly (not serially through a branch of a decision tree) related to all queries or nodes.

Once an Expert creates his decision tree, he starts an adaptive "simulator" (software). Starting at the root question (node), and at each subsequent linked question (node) in the decision tree, the system asks the expert to evaluate a case (as set of data values or parameter set). The data values for the root node are randomly generated, whereas the simulated data values (**not the questions or nodes**) presented in relation to subsequent linked nodes are ***biased*** (but **not** in the 'weighted' sense of the present invention) to avoid data values that conflict with the preceding response to the linked question. Significantly, note that there is no 'weighting' of the question or nodes, which remain unchanged. For example, if a patient is not curable (answer no) then system does not provide parameters relating to whether a patient would benefit from a cure (**therefore biasing in the sense of Altschuler is relating a question to a particular answer by providing only those input variables or parameters that are consistent with the prior answer—and does not 'weight' the question with a bias value in the instant sense, and does not directly relate a question to an output action**); the expert thus proceeds through his/her own tree structure answering the questions using the simulated case data. Random value generation and corresponding

responses are repeated until a statistically significant number of responses are given to achieve a predetermined *statistical* significance for each node (this is not however, equivalent to the instant bias/weighting values). The system determines which parameters (input data) are used by the expert to answer each question (**again this is not relating (i.e., weighting) a question directly with output functions by means of an expert-derived bias/weighting value, but rather determines which input variables are important for answering each question**). That is, the 'predetermined significance' of Altschuler is the Baynesian prediction of outcome based on the statistical significance of responses, not based on weighting of questions. The system (*i.e.*, the software), using a chi square test, creates a *statistical data base* that determines whether a given variable is significant in the expert's choice of responses to the questions, and the likelihood of an answer to a question (*i.e.*, of the expert's answer to a particular question based on the input data) is determined by the relative values of the products of the Baynesian probabilities of the significant input values for each possible outcome. Finally, after the outcome probabilities are calculated for each node of a simulated case, the probability tree is constructed. A "modifer or editor" of the system allows each expert to change his answers to reflect new developments in the field (col.3, line 45 through col. 4, line 69).

The decision tree can be interrogated by entering a situation to be analyzed. The system, using the probability tree (the probability of the expert's response at each node), can predict which path the expert will take through the decision tree to arrive at an output action. An example is discussed for prostate cancer with 22 parameters (input variables; combinatorial variables) that a physician may look at before deciding an output action (treatment). Statistical methods are used (i) to determine which variables (not questions) are significant at each decision making step; and (2) the probability that a particular expert would choose a particular output action (treatment).

In summary, Altschuler teaches an expert system for predicting an expert's decision. The system is based on: (a) an ***interactive statistical inference engine*** (col. 2, ll. 22-23) that is based on; (b) a ***classic decision tree structure comprising a set of linked nodes*** (*e.g.*, questions); wherein (c) a computer generated ***statistical data base*** is generated using chi square and Baynesian probability

methods based on; (d) statistical processing of ***multiple system-generated case simulations*** (simulated data sets), to determine what case data (input parameters) is used by an expert in making a decision at each node to take one path or another through the decision tree (*i.e.*, what input parameters are considered by the expert in answer the expert's question at each node); and (e) to establish a ***probability tree*** that can be used to predict the expert's responses to a particular data set (input parameters). This is fundamentally different from the presently claimed invention.

The instant invention. By contrast, the instant invention does not require use of a non-human expert system inference engine, rules tables, etc, but represents a *novel form* of expert system designed to eliminate the need for classic inference engines and rules tables. Specifically, the present invention does not require, and is not based on a ***statistical inference engine***. The present invention does not require, and is not based on a ***classic decision tree structure comprising a set of linked nodes*** (*e.g.*, questions). The present invention does not require, and is not based on a computer generated ***statistical data base*** generated using chi square and Baynesian probability methods. The present invention does not require, and is not based on statistical processing of ***multiple system-generated case simulations*** (simulated data sets), to determine what case data (input parameters) is used by an expert in making a decision at each node to take one path or another through the decision tree (*i.e.*, what input parameters are considered by the expert in answer the expert's question at each node). The present invention does not require, and is not based on a ***probability tree***.

By contrast, the present invention uses of <u>primary bias values</u> (non-statistically based weighting factors); and comprises ranking the alternative medical diagnoses according to relative likelihood, based at least in part on the <u>product of the at least one response values and the respective medical diagnosis-specific primary bias values</u>). Significantly, Altschuler does *not* directly relate (i.e. weight) questions to output actions (alternative conditions) using a <u>non-statistically-based weighting factor</u>, rather Altschuler relates the statistical significant of responses to outcomes indirectly through nodes of a tree (addressing the issue of consistency of an answer for a particular question).

Significantly, the methods of Altschuler do not comprise ranking medical diagnosis based, at least in part, on the mathematical *product* of the at least one response value and the respective medical diagnosis-specific primary bias values. This is another unique aspect of the present invention. While the methods of Altschuler may comprise determining the <u>statistical significance of responses</u>, (not based on weighting of questions), it does not weight question with a non-statistical weighting value, and it certainly does not perform a mathematical operation between any such weighting factor and the statistical significance of particular responses.

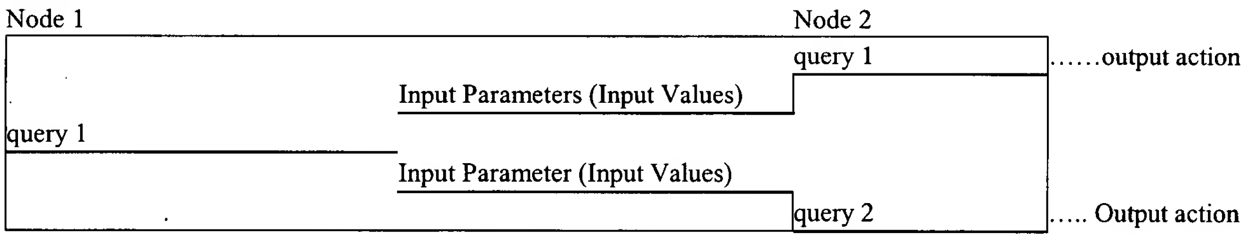
Significantly, Altschuler does *not* teach primary and secondary bias vales (i.e. human expert-derived, non-statistically-derived weighting factors) as taught and required by the present invention. Altschuler does not weight questions using expert-generated bias (i.e. weighting) values, wherein each primary bias/weighting value directly associates a particular query with a particular alternative condition of the set of alternative conditions (so that the each query is directly weighed with respect to each alternative (e.g., medical diagnosis), and reflects at least one human expert's prior conception of the degree of predictive value of the query (not the answer) for the particular alternative condition relative to other alternative conditions. The instant bias values are *not* statistically derived (are not derived using a statistically data base) and reflect at least one <u>human expert's</u> subjective prior conception of the degree of predictive value of a query/response for a particular alternative relative to others; that is, bias values serve to 'weight' the value of the question for each of the alternative diagnoses. The only mention of *biasing* in Altschuler is in relation to the <u>computer assisted</u> adaptive simulator aspect where <u>the computer</u> biases (adapts) the random number generator to reflect the type of data that would be channeled through a particular branch of the decision tree (see col. 3, ll. 50-60). Therefore, not only are the questions of Altschuler in the form/context of a classic decision tree (not the instant invention), but there is no direct 'weighting' in the instant sense of a <u>question</u> (query) for its predictive value, rather there is only an computer assisted statistical biasing of the type of input parameters (not questions) that would be used by a particular expert in answering the expert's question (different than input parameters). This is <u>fundamentally different</u> than the expert-assigned primary bias values of the present invention. In the

present array-based method, each and every query (not answer) is directly and non-statistically weighted to each and every alternative condition by respective bias values. Applicants, to facilitate appreciation of the fundamental differences, provide the explanatory representations below to compare the instant relationship of query to alternative conditions to the classic decision tree relationships of Altschuler:

Ahmed

x/y	alternative condition 1	alternative condition 2
query 1	bias value (q1,ac1)	bias value (q1, ac2)
query 2	bias value (q2,ac1)	bias value (q2, ac2)

Altschuler



Significantly, in the instant invention, the set of primary bias values comprises, with respect to each query, a corresponding set of alternative diagnosis-specific primary bias values each directly weights the particular query with each respective alternative diagnosis, and each bias value directly reflects at least one human expert's prior conception of the degree of predictive value of the query for the particular alternative diagnosis relative to others.

The presently claimed subjected matter is, therefore, fundamentally distinguishable from Altschuler, alone or in combination, due to instant recitation of "and a set of primary bias values..." as discussed herein above (and recitation of secondary bias values). There is no teaching or assignment of such bias values in Altschuler, alone or in combination.

Additionally, Altschuler, alone or in combination, explicitly and fundamentally ***teaches away*** from the present claimed subject matter by teaching the <u>sole use</u> of statistical inference engines and classic decision trees.

The instant experts <u>don't</u> teach possible <u>responses</u> to queries, but rather teach/provide bias (i.e. weighting) values of questions with respect to alternative <u>outcomes</u> (different than the response

SEA 2018679v1 0053296-000002

biasing of Altschuler) to queries, as instantly taught. 'Biasing' in Altschuler (by a function of a preceding response to avoid inconsistencies) is fundamentally distinguishable from the instant primary and secondary *bias values*, as discussed in detail herein above.

Nonetheless, in view of the Examiner's comments, the Applicant has made further clarifying amendments to independent claims 6, 15 to further emphasize and clarify the unique nature of the instant bias values and methods. Specifically, claims 6, 12, 15 and 21 now recite "inputting a response to the at least one query into the computer <u>to provide for at least one respective response value</u>; (c) ranking, using a software program stored on the storage device that is operative with a processor of the computer to receive and process the response, the alternative medical diagnoses according to relative likelihood, based at least in part on the <u>product of the at least one response values and the respective medical diagnosis-specific</u> primary bias values to provide a medical diagnosis comprising a ranked set of alternative medical diagnoses; and d) providing the medical diagnosis, or a portion thereof, to the user. Support for recitation of "response value" and ":product of the response value and the respective medical diagnosis specific primary bias value is found throughout the originally filed application, for example at page 18, second full paragraph. No new matter has been added. This amendment not only serves to more clearly emphasize the unique and distinguishing array-based relationship inherent to the instant primary and secondary bias values, which are not taught by Altschuler, alone or in combination with any other reference asserted by the Examiner, but also emphasizes the unique relational aspect that that the response values are multiplied by the primary bias values.

Lawrence et al. The Examiner asserts that Lawrence et al teach a software program stored on a storage device that is operative with a processor of the computer. However, the teachings of Lawrence are limited to a general purpose integrated medical computer system to facilitate administration and housekeeping functions by coordinating various types of databases (see, *e.g.*, Abstract), and does not provide the teachings necessary, alone or in combination with Altschuler to provide the present invention as described in the arguments above.

Applicant, therefore, respectfully requests withdrawal of the Examiner's 35 U.S.C. § 103(a)-based rejection of claims 6-9, 10, 11-14 and 24.

Altschuler in view of Lawrence:

The Examiner additionally rejected *dependent* claim 10, under 35 U.S.C. § 103(a), as being obvious over *Altschuler*, in view of *Lawrence.*

Specifically, the Examiner paraphrases the alleged teachings of Altschuler (as described herein above), and further states that: while Altschuler does not teach a software program stored on the storage device that is operative with a processor of the computer and generating secondary bias values, and ranking the alternatives by using algorithm 42;—Lawrence does teach using such a stored, operative software program; and further that generating secondary bias values, and ranking alternatives, at least in part by using algorithm 42 is conventional and well known (citing Islam et al U.S. Patent 6,115,712) (see Office Action at page 16). The Examiner further states that it would have been obvious to modify Altschuler as taught by Lawrence for the purpose of processing patient information, and to generate secondary bias values, and rank the alternatives by using algorithm 42.

Applicant respectfully traverses this rejection based on arguments that have been discussed in detail herein above with respect to the nature of limited teachings of Altschuler and Lawrence. Additionally, neither of these references, alone or in combination teach or suggest *primary bias values* as defined and taught in the present invention, and therefore, do not teach or suggest *secondary bias values*. Rather, the present system and methods comprise elements not taught or suggested by the prior art, including Altschuler and Lawrence:

-use of <u>primary bias values</u> (non-statistically based weighting factors); and

-ranking the alternative medical diagnoses according to relative likelihood, based at least in part on the <u>product of the at least one response values and the respective medical diagnosis-specific primary bias values</u>).

Applicant, therefore, respectfully requests withdrawal of this 35 U.S.C. § 103(a)-based rejection of *dependent* claim 10.

SEA 2018679v1 0053296-000002

Altschuler in view of Lawrence, in further view of Ridgeway:

The Examiner additionally rejected *dependent* claim 19, under 35 U.S.C. § 103(a), as being obvious over *Altschuler*, in view of *Lawrence* and in further view of *Ridgeway et al Ridgeway* (6,012,052).

Specifically, the Examiner paraphrases the alleged teachings of Altschuler (as described herein above), and further states that: while Altschuler does not teach a method over a wide-area network, a plurality of electronic databases of a server, transmitting the user's response to the server over the wide-area network, a software program that is operative with a processor of the server, transmitting the ranked set of alternatives to the user subsystem over the wide-area network, whereby the set of alternatives is ranked according to likelihood and generating secondary bias values, and ranking the alternatives by algorithm 42;--Lawrence teaches a such an operative software program; and Ridgeway teaches a method over a wide-area network, transmitting the user's response to the server over a wide-area network, a database of a server and a software program operative with a processor thereof, transmitting the ranked set of alternatives to the user subsystem over the wide-area network, whereby the set of alternatives is ranked according to likelihood. The Examiner further takes notice that generating secondary bias values and ranking the alternatives using algorithm 42 is convention and well-know. The Examiner further states that it would have been obvious to modify Altschuler as taught by Lawrence and Ridgeway for the purpose of processing medical/patient information as well as better utilizing resources/communications bandwidth, and "to generate secondary bias values...."

Applicant respectfully traverses this rejection based on arguments that have been discussed in detail herein above with respect to the nature of limited teachings of Altschuler, Lawrence and Ridgeway. Additionally, none of these references, alone or in combination, teach or suggest *primary bias values* as defined and taught in the present invention, and therefore, do not teach or suggest *secondary bias values*. Rather, the present system and methods comprise elements not taught or suggested by the prior art, including Altschuler and Lawrence:

-use of primary bias values (non-statistically based weighting factors); and

-ranking the alternative medical diagnoses according to relative likelihood, based at least in part on the product of the at least one response values and the respective medical diagnosis-specific primary bias values).

Applicant, therefore, respectfully requests withdrawal of this 35 U.S.C. § 103(a)-based rejection of claim 19.

Rejections under 35 U.S.C. § 102

Altschuler

The Examiner rejected claims 6-14, 24, and 26, under 35 U.S.C. § 102(b), as allegedly being anticipated by *Altschuler* (4,872,122; 03 October 1989). Applicant respectfully traverses this rejections, but has nonetheless made responsive amendments to obviate this rejection.

With respect to Altschuler, the Examiner states that "statistical base" is interpreted as 'electronic databases,' "output actions" as 'alternative diagnosis,' and a "plurality of [decision tree] structures" as a query set comprising 'at least one query.'

Additionally, the Examiner states that "random values of the input parameters are generated… and biased by a function of a preceding response" (Applicant points out that this is fundamentally different from the query weighting of the present invention as has already been discussed in detail above with respect to the section 103(a)-based rejections). The Examiner further states that "function of a preceding response" is interpreted as 'mapping a preceding response to a bias value' and the "bias values" to be those included in random "values of the input parameters," wherein the set of primary bias values comprises, with respect to each query, a corresponding set of alternative diagnosis-specific primary bias values each directly associating the particular query with each respective alternative diagnosis." The Examiner further states that "the ***iterative*** use of the 'function of a preceding response' to produce a set of biased random values for each response for each ***subsequent*** question (query) in each branch of the tree created by the simulator, thus associating a particular query with each respective alternative 'response' (diagnosis), and each bias

value directly reflecting at least one human experts' prior conception of the degree of predictive value of the query for the particular alternative diagnosis relative to others...." (emphasis added).

As stated above with respect to the Examiner's section 103(a)-based rejection, in Altschuler, once an Expert creates his decision tree, he starts an adaptive "simulator" (software). Starting at the root question (node), and at each subsequent linked question (node) in the decision tree, the system asks the expert to evaluate a case (as set of data values or parameter set). The data values for the root node are randomly generated, whereas the simulated data values (<u>not the questions or nodes</u>) presented in relation to subsequent linked nodes are *biased* (but <u>not</u> in the 'weighted' sense of the present invention) to avoid data values that conflict with the preceding response to the linked question. <u>Significantly, note that there is no 'weighting' of the question or nodes, which remain unchanged</u>. For example, if a patient is not curable (answer no) then system does not provide parameters relating to whether a patient would benefit from a cure (<u>therefore biasing in the sense of Altschuler is relating a question to a particular answer by providing only those input variables or parameters that are consistent with the prior answer—and does not 'weight' the question with a bias value in the instant sense, and does not directly relate a question to an output action</u>); the expert thus proceeds through his/her own tree structure answering the questions using the simulated case data. Random value generation and corresponding responses are repeated until a statistically significant number of responses are given to achieve a predetermined *statistical* significance for each node (this is not however, equivalent to the instant bias/weighting values). The system determines which parameters (input data) are used by the expert to answer each question (<u>again this is not relating (i.e., weighting) a question directly with output functions by means of an expert-derived bias/weighting value, but rather determines which input variables are important for answering each question</u>). That is, the 'predetermined significance' of Altschuler is the Baynesian prediction of outcome <u>based on the statistical significance of responses</u>, not based on weighting of questions. The system (*i.e.*, the software), using a chi square test, creates a *statistical data base* that determines whether a given variable is significant in the expert's choice of responses to the questions, and the likelihood of an answer to a question (*i.e.*, of the expert's answer to a particular question based on

the input data) is determined by the relative values of the products of the Baynesian probabilities of the significant input values for each possible outcome. Finally, after the outcome probabilities are calculated for each node of a simulated case, the probability tree is constructed. A "modifer or editor" of the system allows each expert to change his answers to reflect new developments in the field (col.3, line 45 through col. 4, line 69).

The decision tree can be interrogated by entering a situation to be analyzed. The system, using the probability tree (the probability of the expert's response at each node), can predict which path the expert will take through the decision tree to arrive at an output action. An example is discussed for prostate cancer with 22 parameters (input variables; combinatorial variables) that a physician may look at before deciding an output action (treatment). Statistical methods are used (i) to determine which variables (not questions) are significant at each decision making step; and (2) the probability that a particular expert would choose a particular output action (treatment).

In summary, Altschuler teaches an expert system for predicting an expert's decision. The system is based on: (a) an *interactive statistical inference engine* (col. 2, ll. 22-23) that is based on; (b) a *classic decision tree structure comprising a set of linked nodes* (*e.g.*, questions); wherein (c) a computer generated *statistical data base* is generated using chi square and Baynesian probability methods based on; (d) statistical processing of *multiple system-generated case simulations* (simulated data sets), to determine what case data (input parameters) is used by an expert in making a decision at each node to take one path or another through the decision tree (*i.e.*, what input parameters are considered by the expert in answer the expert's question at each node); and (e) to establish a *probability tree* that can be used to predict the expert's responses to a particular data set (input parameters). This is fundamentally different from the presently claimed invention.

The instant invention. By contrast, the instant invention does not require use of a non-human expert system inference engine, rules tables, etc, but represents a *novel form* of expert system designed to eliminate the need for classic inference engines and rules tables. Specifically, the present invention does not require, and is not based on a *statistical inference engine*. The present invention does not require, and is not based on a *classic decision tree structure comprising a set of*

linked nodes (*e.g.*, questions). The present invention does not require, and is not based on a computer generated *statistical data base* generated using chi square and Baynesian probability methods. The present invention does not require, and is not based on statistical processing of *multiple system-generated case simulations* (simulated data sets), to determine what case data (input parameters) is used by an expert in making a decision at each node to take one path or another through the decision tree (*i.e.*, what input parameters are considered by the expert in answer the expert's question at each node). The present invention does not require, and is not based on a *probability tree*.

By contrast, the present invention uses of <u>primary bias values</u> (non-statistically based weighting factors); and comprises ranking the alternative medical diagnoses according to relative likelihood, based at least in part on the <u>product of the at least one response values and the respective medical diagnosis-specific primary bias values</u>). Significantly, Altschuler does *not* directly relate (i.e. weight) questions to output actions (alternative conditions) using a <u>non-statistically-based weighting factor</u>, rather Altschuler relates the statistical significant of responses to outcomes indirectly through nodes of a tree (addressing the issue of consistency of an answer for a particular question).

Significantly, the methods of Altschuler do not comprise ranking medical diagnosis based, at least in part, on the mathematical *product* of the at least one response value and the respective medical diagnosis-specific primary bias values. This is another unique aspect of the present invention. While the methods of Altschuler may comprise determining the <u>statistical significance of responses</u>, (not based on weighting of questions), it does not weight question with a non-statistical weighting value, and it certainly does not perform a mathematical operation between any such weighting factor and the statistical significance of particular responses.

Significantly, Altschuler does *not* teach primary and secondary bias vales (i.e. human expert-derived, non-statistically-derived weighting factors) as taught and required by the present invention. Altshchuler does not weight questions using expert-generated bias (i.e. weighting) values, wherein each primary bias/weighting value directly associates a particular query with a particular alternative

condition of the set of alternative conditions (so that the each query is directly weighed with respect to each alternative (e.g., medical diagnosis), and reflects at least one human expert's prior conception of the degree of predictive value of the query (not the answer) for the particular alternative condition relative to other alternative conditions. The instant bias values are *not* statistically derived (are not derived using a statistically data base) and reflect at least one human expert's subjective prior conception of the degree of predictive value of a query/response for a particular alternative relative to others; that is, bias values serve to 'weight' the value of the question for each of the alternative diagnoses. The only mention of *biasing* in Altschuler is in relation to the computer assisted adaptive simulator aspect where the computer biases (adapts) the random number generator to reflect the type of data that would be channeled through a particular branch of the decision tree (see col. 3, ll. 50-60). Therefore, not only are the questions of Altschuler in the form/context of a classic decision tree (not the instant invention), but there is no direct 'weighting' in the instant sense of a question (query) for its predictive value, rather there is only an computer assisted statistical biasing of the type of input parameters (not questions) that would be used by a particular expert in answering the expert's question (different than input parameters). This is fundamentally different than the expert-assigned primary bias values of the present invention. In the present array-based method, each and every query (not answer) is directly and non-statistically weighted to each and every alternative condition by respective bias values. Significantly, in the instant invention, the set of primary bias values comprises, with respect to each query, a corresponding set of alternative diagnosis-specific primary bias values each directly weights the particular query with each respective alternative diagnosis, and each bias value directly reflects at least one human expert's prior conception of the degree of predictive value of the query for the particular alternative diagnosis relative to others.

The presently claimed subjected matter is, therefore, fundamentally distinguishable from Altschuler, alone or in combination, due to instant recitation of "and a set of primary bias values..." as discussed herein above (and recitation of secondary bias values). There is no teaching or assignment of such bias values in Altschuler, alone or in combination.

Additionally, Altschuler, alone or in combination, explicitly and fundamentally *teaches away* from the present claimed subject matter by teaching the sole use of statistical inference engines and classic decision trees.

The instant experts don't teach possible responses to queries, but rather teach/provide bias (i.e. weighting) values of questions with respect to alternative outcomes (different than the response biasing of Altschuler) to queries, as instantly taught. 'Biasing' in Altschuler (by a function of a preceding response to avoid inconsistencies) is fundamentally distinguishable from the instant primary and secondary *bias values*, as discussed in detail herein above.

Nonetheless, in view of the Examiner's comments, the Applicant has made further clarifying amendments to independent claims 6, 15 to further emphasize and clarify the unique nature of the instant bias values and methods. Specifically, claims 6, 12, 15 and 21 now recite "inputting a response to the at least one query into the computer to provide for at least one respective response value; (c) ranking, using a software program stored on the storage device that is operative with a processor of the computer to receive and process the response, the alternative medical diagnoses according to relative likelihood, based at least in part on the product of the at least one response values and the respective medical diagnosis-specific primary bias values to provide a medical diagnosis comprising a ranked set of alternative medical diagnoses; and d) providing the medical diagnosis, or a portion thereof, to the user. Support for recitation of "response value" and ":product of the response value and the respective medical diagnosis specific primary bias value is found throughout the originally filed application, for example at page 18, second full paragraph. No new matter has been added. This amendment not only serves to more clearly emphasize the unique and distinguishing array-based relationship inherent to the instant primary and secondary bias values, which are not taught by Altschuler, alone or in combination with any other reference asserted by the Examiner, but also emphasizes the unique relational aspect that that the response values are multiplied by the primary bias values.

Applicant, therefore, respectfully requests withdrawal of this 35 U.S.C. § 102(b)-based rejection of claims as presently amended.

New dependent claims.

New dependent claims 27 and 28 have been added, being fully supported by the originally filed specification. Support for the claims is found, for example, at page 31.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests entry of the present Response and Amendment, and allowance of all claims 6-26 as provided and amended herein above.

The Examiner is encouraged to phone applicant's attorney, Barry L. Davison, to resolve any outstanding issues and expedite allowance of this application.

Respectfully submitted,

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